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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/831,468 | 05/09/2001 | Christian Kratzsch | STUR-37 | 5594 |

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EXAMINER

EDMONDSON, LYNNE RENEE

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

1725

DATE MAILED: 09/23/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/831,468

Applicant(s)

KRATZSCH ET AL.

Examiner

Lynne Edmondson

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-- **Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --**
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 May 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 24-46 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 24-46 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 May 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4. 6) ☐ Other:

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DETAILED ACTION

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

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2. Claims 24, 25, 35, 36, 41 and 42 are rejected under 35 U.S.C. 102(b) as being anticipated by Kasner et al. (USPN 4789770).

Kasner teaches a method and device for laser processing. The method comprises the steps of processing a workpiece by laser radiation by focusing radiation onto a workpiece , monitoring the process by detecting light radiation emanating from the workpiece (col 1 lines 5-13 and col 3 lines 1-8) wherein optical measurement is performed in a processing area of the workpiece by means of an external source of measuring light utilizing measuring reflected light wherein light for process monitoring and reflected light are detected utilizing a single processing optic (mirror 75) (col 11 line 18 – col 12 line 10 and figure 7). The reflected light is parallel and the processing light contacts the workpiece at an angle (figure 5). The detector comprises a camera and is used to perform a positioning measurement (col 7 lines 15-27). See also Kasner claims 1-30.

3. Claims 24-44 and 46 are rejected under 35 U.S.C. 102(e) as being anticipated by Beyer et al. (USPN 5869805).

Beyer teaches a method and device for laser processing. The method comprises the steps of processing a workpiece by laser radiation by focusing radiation (12) onto a workpiece (10), monitoring the process by detecting light radiation emanating from the workpiece (col 1 lines 14-35) wherein optical measurement is performed in a processing area of the workpiece by means of an external source of measuring light utilizing measuring reflected light (12') wherein light for process monitoring and reflected light

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are detected utilizing a single processing optic (mirror 15) (col 3 line 66 – col 4 line 18 and figure 1). The light radiation is isoaxial to the viewing optics and at an angle forming a cone relative to the workpiece (figure 1). An optical measurement is performed which maps the melt at the processing sight (col 5 lines 11-24).

Different zones (areas above and below the workpiece, holes within the workpiece and the entire thickness of the workpiece) are sensed simultaneously (col 7 line 55 – col 8 line 8). Secondary radiation is used as reflected measuring light from regions

surrounding the processing zone (vapor capillary) (figures 3a-3c and col 6 lines 24-45).

The area as a whole is sensed with local (high) resolution (col 4 lines 12-26). The detector comprises a linear array (row) of sensors (col 7 lines 34-54) which read out (give output values) for analysis (evaluation unit 20) through windows (col 4 lines 33-44 and col 4 line 61 – col 5 line 10) wherein analysis may be continuous or intermittent (col 2 line 25 – col 3 line 17 and col 7 lines 18-25). The optic is a decoupling component (perforated mirror 15) placed in the beam path (col 4 lines 3-15 and figure 1) and disposed in the not numbered laser head containing parts 15 and 27 in figure 1. The measuring light is amplitude modulated at a fixed frequency (col 4 line 61 – col 5 line 5). The light can be applied in temporal succession with repetition (time intervals, col 7 lines 19-25). Disposed ahead of the detector is an optical filter system to delimit the observation zones of the processing area (col 4 lines 45-60). See Beyer claims 1-12.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 45 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kasner et al. (USPN 4789770) in view of McIntosh (USPN 4344699).

Kasner teaches a method and device for laser processing. The method comprises the steps of processing a workpiece by laser radiation by focusing radiation onto a workpiece, monitoring the process by detecting light radiation emanating from the workpiece (col 1 lines 5-13 and col 3 lines 1-8) wherein optical measurement is performed in a processing area of the workpiece by means of an external source of measuring light utilizing measuring reflected light wherein light for process monitoring and reflected light are detected utilizing a single processing optic (mirror 75) (col 11 line 18 – col 12 line 10 and figure 7). The reflected light is parallel and the processing light contacts the workpiece at an angle (figure 5). The detector comprises a camera and is used to perform a positioning measurement (col 7 lines 15-27). See also Kasner claims 1-30. However, the detector range is not disclosed.

McIntosh teaches a laser processing device (col 1 lines 15-28) comprising detectors using cameras with a full dynamic range (col 10 line 65 – col 11 line 4) over plural decades of intensity (col 6 line 58 – col 7 line 5 and col 7 lines 52-60).

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It would have been obvious to one of ordinary skill in the art at the time of the invention to employ a camera with a full dynamic range to quickly and effectively take measurements (Kasner, col 7 lines 10-25) for feedback to control complex drilling of high density packages (Kasner, col 4 lines 3-28).

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Amada (JPN 10-296465-A), Juptner et al. (EPN 252268 A), Rose (USPN 4543486, device), Hampton (USPN 4794238, single optic), Black et al. (USPN 5382770), Maischner et al. (USPN 5486677), Kurosawa et al. (USPN 5463202), Peters et al. (USPN 5850068), Benda et al. (USPN 5530221) and Beyer et al. (USPN 5373135).

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lynne Edmondson whose telephone number is (703) 306-5699. The examiner can normally be reached on M-F from 7-4 with alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (703) 308-3318. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-7118 for regular communications and (703) 305-7115 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0651.

Lynne Edmondson

Examiner

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A handwritten signature in cursive script, followed by the date 9/18/02.

LRE

September 17, 2002